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EXAMINER	
SUN, XIUQIN	

ART UNIT	PAPER NUMBER
2863	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/773,015	BERTRAND, DAVID	
	Examiner	Art Unit	
	Xiuqin Sun	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *15 and 16* is/are allowed.

6)☒ Claim(s) *1-3,8 and 10* is/are rejected.

7)☒ Claim(s) *4-7,9 and 11-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Giustino (U.S. Pub. No. 20050005692) in view of Elsner et al. (U.S. Pub. No. 20040036590).

With respect to claim 1:

Giustino teaches a method of determining at least one characteristic of a tire from the three components of a resultant of forces which are exerted by the road on the contact area of a tire, the self-alignment torque generated by the tire, the camber, and the pressure (see Abstract); the method comprising the steps of obtaining at least two measurements of extension or contraction between at least a pair of fixed points in at least one sidewall of the tire (sections 0045, 0048, 0051, 0053 and 0054); and calculating said characteristic from said at least two measurements (sections 0006, 0007, 0052 and 0056-0078).

Giustino does not mention expressly: said sensors are positioned at a same radius, being separated in azimuth and at two predetermined azimuth positions of the tire that are separated in azimuth from the center of the contact area.

Elsner et al. teach a sensor system for detecting variables to be measured on a rotating tire, wherein at least two sensors are positioned in the tire's sidewall at a same radius, being separated in azimuth and at two predetermined azimuth positions (33, a, c) of the tire that are separated in azimuth from the center of the contact area (sections 0041-0044 and 0051; Figs. 1 and 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Elsner et al. in the invention of Giustino in order to provide a sensor system to detect dimensional variables whose values are not uniform along the angular direction through the tire (Elsner et al., sections 0008-0010).

With respect to claim 2:

Giustino teaches a method of determining at least one characteristic of a tire from the three components of a resultant of forces which are exerted by the road on the contact area of a tire, the self-alignment torque generated by he tire, the camber, and the pressure (see Abstract); the method comprising the steps of obtaining at least two measurements of extension or contraction between at least a pair of fixed points in at least one sidewall of the tire (sections 0045, 0048, 0051, 0053 and 0054); and calculating said characteristic from said at least two measurements (sections 0006, 0007, 0052 and 0056-0078).

Giustino does not mention: said sensors are positioned at a same radius, being separated in azimuth in each of the sidewalls of the tire and at two predetermined azimuth positions of the tire that are separated in azimuth from the center of the contact area; the circumferential contraction or extension of both of the sidewalls is estimated by measuring the distance between the cords of the carcass ply in the sidewalls.

Elsner et al. teach a sensor system for detecting variables to be measured on a rotating tire, wherein at least two sensors are positioned in the tire's sidewall at a same radius, being separated in azimuth and at two predetermined azimuth positions (33, a, c) of the tire that are separated in azimuth from the center of the contact area (sections 0041-0044 and 0051; Figs. 1 and 2); wherein the circumferential contraction or extension of the sidewalls is estimated by measuring the distance between the cords of the carcass ply in the sidewalls (sections 0043 and 0059).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Elsner et al. in the invention of Giustino in order to provide a simple and compact sensor system to detect dimensional variables whose values are not uniform along the angular direction through the tire (Elsner et al., sections 0008-0010).

In view of the teachings of Giustino and Elsner et al., it would also have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the two-sensor arrangement taught by the combination of Giustino and Elsner et al. for each of the sidewalls of the tire in order to provide a complete measurement of the characteristic of a tire, since it has been held that mere duplication of essential

working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.,* 193 USPQ 8.

With respect to claim 3:

Giustino teaches a method of determining at least one characteristic of a tire from the three components of a resultant of forces which are exerted by the road on the contact area of a tire, the self-alignment torque generated by he tire, the camber, and the pressure (see Abstract); the method comprising the steps of obtaining at least two measurements of extension or contraction between at least a pair of fixed points in at least one sidewall of the tire (sections 0045, 0048, 0051, 0053 and 0054); and calculating said characteristic from said at least two measurements (sections 0006, 0007, 0052 and 0056-0078).

Giustino does not mention: said sensors are positioned at a same radius, being separated in azimuth in each of the sidewalls of the tire and at two predetermined azimuth positions of the tire that are separated in azimuth from the center of the contact area; said circumferential contraction or extension of both of the sidewalls is estimated by measuring the distance between wires forming a sensor which measures a variation in capacitance linked with the distance separating two electrodes.

Elsner et al. teach a sensor system for detecting variables to be measured on a rotating tire, wherein at least two sensors are positioned in the tire's sidewall at a same radius, being separated in azimuth and at two predetermined azimuth positions (33, a, c) of the tire that are separated in azimuth from the center of the contact area (sections 0041-0044 and 0051; Figs. 1 and 2); wherein said circumferential contraction or

extension of the sidewalls is estimated by measuring the distance between wires forming a sensor which measures a variation in capacitance linked with the distance separating two electrodes (sections 0009, 0010, 0014 and 0059).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Elsner et al. in the invention of Giustino in order to provide a sensor system to detect dimensional variables whose values are not uniform along the angular direction through the tire (Elsner et al., sections 0008-0010).

In view of the teachings of Giustino and Elsner et al., it would also have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the two-sensor arrangement taught by the combination of Giustino and Elsner et al. for each of the sidewalls of the tire in order to provide a complete measurement of the characteristic of a tire, since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.,* 193 USPQ 8.

With respect to claim 10:

Giustino teaches the method that includes the subject matter discussed above except that: at least three measurements of circumferential extension or contraction in a single sidewall of the tire are used.

Elsner et al. teach at least one additional measurement of circumferential extension or contraction in a single sidewall of the tire that is different from what taught by Giustino (sections 0018-0024).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Elsner et al. in the invention of Giustino in order to provide a sensor system that is capable of detecting multiple dimensional variables whose values are not uniform along the angular direction through the tire for better measurement of the circumferential deformation of the tire (Elsner et al., sections 0008-0010).

3. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Giustino (U.S. Pub. No. 20050005692) in view of Elsner et al., as applied to claim 1 above, and further in view of Caretta et al. (U.S. Pat. No. 6763288).

Giustino and Elsner et al. teach the method that includes the subject matter discussed above.

The combination of Giustino and Elsner et al. does not mention explicitly: a camber angle is estimated from a detected difference in load supported by each of the sidewalls on the basis of measurements of circumferential extension or contraction.

Caretta et al. teach a method of measuring deformation of vehicle tires, including the steps of: estimating the circumferential contraction or extension of the tire's sidewalls by measuring the distance between the cords of the carcass ply in the sidewalls (col. 5, lines 25-45; col. 7, lines 45-67; col. 8, lines 1-46 and col. 10, lines 17-23); estimating a camber angle using the relationship between the camber angle and the detected difference in load supported by each of the sidewalls on the basis of measurements of circumferential deformation (col. 2, lines 49-67; col. 3, lines 1-7; col. 17, lines 9-22 and lines 36-44 and col. 18, lines 1-4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Caretta et al. in the combination of Giustino and Elsner et al. in order to accurately measure the circumferential deformation of the sidewalls during certain special events and conditions (Caretta et al., col. 3, lines 32-50).

Allowable Subject Matter

4. Claims 4-7, 9 and 11-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 15 and 16 are allowed.

Reasons for Allowance

5. The following is an examiner's statement of reasons for allowance:

The primary reason for the allowance of claim 4 is the inclusion of the limitation that the measurement azimuths are selected to be symmetrical with respect to the azimuth of the center of the contact area (180°+ α° and 180°-α°), with α not equal to α_o, where α_o is the azimuth at the entry of the contact area, V_1^1 and V_2^1 being the values measured at these azimuths on the first sidewall and V_1^2 and V_2^2 being the values measured at these azimuths on the second sidewall, an estimate of the component Fz

is provided by $f_Z(a_1V_1^1+a_2V_2^1+b_1V_1^2+b_2V_2^2)$, where a_1, a_2, b_1 and b_2 are positive real coefficients and f_Z is a monotonic continuous function. It is this limitation found in the claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

The primary reason for the allowance of claim 5 is the inclusion of the limitation that the measurement azimuths are selected to be symmetrical with respect to the azimuth of the center of the contact area (180°+ α° and 180°-α°), with α not equal to α_o, where α_o is the azimuth at the entry of the contact area, V_1^1 and V_2^1 being the values measured at these azimuths on the first sidewall and V_1^2 and V_2^2 being the values measured at these azimuths on the second sidewall, an estimate of the component Fx is provided by $f_x(c_1V_1^1+c_2V_2^1+d_1V_1^2+d_2V_2^2)$, where c_1, c_2, d_1 and d_2 are positive real coefficients and fx is a monotonic continuous function. It is this limitation found in the claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

The primary reason for the allowance of claim 6 is the inclusion of the limitation that the measurement azimuths are selected to be symmetrical with respect to the azimuth of the center of the contact area (180°+ α° and 180°-α°), with α not equal to α_o, where α_o is the azimuth at the entry of the contact area, V_1^1 and V_2^1 being the values measured at these azimuths on the first sidewall and V_1^2 and V_2^2 being the values measured at these azimuths on the second sidewall, an estimate of the component Fy of the applied force is provided by $f_y(e_1V_1^1+e_2V_2^1+f_1V_1^2+f_2V_2^2)$, where e_1, e_2, f_1 and f_2 are positive real coefficients and fy is a monotonic continuous function. It is this limitation

found in the claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

The primary reason for the allowance of claim 7 is the inclusion of the limitation that the measurement azimuths are selected to be symmetrical with respect to the azimuth of the center of the contact area (180°+ α° and 180°-α°), with α not equal to α_o, where α_o is the azimuth at the entry of the contact area, V_1^1 and V_2^1 being the values measured at these azimuths on the first sidewall and V_1^2 and V_2^2 being the values measured at these azimuths on the second sidewall, an estimate of the self-alignment torque N is provided by $f_n(g_1V_1^1+g_2V_2^1+h_1V_1^2+h_2V_2^2)$, where g_1, g_2, h_1 and h_2 are positive real coefficients and fn is a monotonic continuous function. It is this limitation found in the claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

The primary reason for the allowance of claim 9 is the inclusion of the claimed method step of obtaining measurements of circumferential extension or contraction and determining a contribution due to the pneumatic behavior separate from a contribution due to the structural behavior. It is this limitation found in the claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

The primary reason for the allowance of claim 11 is the inclusion of the limitation that the measurement azimuths are selected to be symmetrical with respect to the azimuth of the center of the contact area (180°+ α° and 180°-α°), with α not equal to α_o, where α_o is the azimuth at the entry of the contact area, V_1 and V_2 being the values

measured at these azimuths other azimuths, an estimate of Fx is provided by $f_x(r_2V_2 - r_1V_1)$, where r_1, r_2 are positive real coefficients and fx is a monotonic continuous function. It is this limitation found in the claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

The primary reason for the allowance of claims 12-14 is the inclusion of the limitation that measurements of circumferential extension or contraction are performed for at least three predetermined azimuth positions of the tire, which azimuth positions are defined such that: a first azimuth position corresponds to one of: the azimuth of the center of the contact area; and the azimuth of a point opposite to the contact area; a second azimuth position and third azimuth position are symmetrically located with respect to a vertical plane passing through the center of the contact area. It is these this limitation found in each of the claims, as it is claimed in the combination that have not been found, taught or suggested by the prior art of record, which make these claims allowable over the prior art.

The primary reason for the allowance of claims 15 and 16 is the inclusion of the claimed method steps of: determining measurement azimuths and collecting values of circumferential extension of at least one sidewall during varied stresses on the tire which stresses are selected to span a full range in which evaluation of the at least one selected characteristic will be permitted in normal use, the selected stresses giving rise to all the couplings liable to be encountered during normal use; obtaining values of circumferential extension with a first measurement means and values of the at least one

selected characteristic associated with circumferential extension with a second measurement means in order to form a training base. It is these limitations found in each of the claims, as they are claimed in the combination that have not been found, taught or suggested by the prior art of record, which make these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Response to Arguments

7. Applicant's arguments received 01/23/06 with respect to claims 1-3, 8 and 10 have been considered but they are not persuasive.

In response to Applicant's arguments, the Examiner considers that Giustino's disclosure is not clear about obtaining at least two measurements of circumferential extension or contraction between a pair of fixed points positioned at a same radius and being separated in azimuth in at least one sidewall of the tire at two predetermined azimuth positions of the tire that are separated in azimuth from the center of the contact area, as recited in claims 1-3. The combination of Giustino and Elsner et al.'s teaching of these limitations reads on the claims. The rejections stand.

Applicant further argued that "Elsner teaches away from making measurements that are separated in azimuth from the contact area .....". This argument is not persuasive. It is the Examiner's position that Elsner does teach making measurements that are separated in azimuth from the contact area (Figs. 1 and 2; section 0051).

In response to Applicant's argument that "Nothing has been found or pointed out in the prior art that teaches or suggests making measurements in both sidewalls, ...", the Examiner considers that in view of the teachings of Giustino and Elsner et al., it would also have been obvious to one having ordinary skill in the art at the time the invention was made to duplicate the two-sensor arrangement taught by the combination of Giustino and Elsner for each of the sidewalls of the tire in order to obtain a complete measurement of the characteristic of a tire, since it has been held that mere duplication

of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. The rejections stand.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (571)272-2280. The examiner can normally be reached on 6:30am-4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571)272-2269. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Xiuqin Sun
Examiner
Art Unit 2863

XS
March 3, 2006

John Barlow
Supervisory Patent Examiner
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